

composition comprising the reaction product in an organic solvent of a Lewis base electrically conducting polymer in undoped form and a Lewis acid polymer dopant, the resulting conductive blend being miscible at the molecular level.

54. The electrically conductive polymer blend composition defined in claim 53 wherein said polymers interact at a plurality of sites along the length of said polymer thereby resulting in a molecularly compatible blend.

55. The electrically conductive polymer blend composition defined in claim 54 wherein said electrically conducting polymer complexes with said polydopant.

56. The electrically conductive polymer blend composition defined in claim 55 wherein one of said polymers is a rigid polymer.

57. The electrically conductive polymer blend composition defined in claim 55 wherein said electrically conductive polymer is selected from the group consisting of substituted and unsubstituted polyparaphenylenevinylenes, polyanilines, polyazines, polythiophenes, poly-p-phenylene sulfides, polyfuranes, polypyrroles, polyselenophenes, polyacetylenes formed from soluble precursors and combinations and blends thereof.

58. The electrically conductive polymer blend composition defined in claim 57 wherein said polydopant is a dielectric polymer containing Lewis acid functionality.

59. The electrically conductive polymer blend composition defined in claim 58 wherein said polydopant is selected from the

group consisting of polyacrylic acids, polysulfonic acid, cellulose sulfonic acid, polyamic acid, polyphosphoric acid, polymers containing acid chloride groups ( $-\text{CO}-\text{Cl}$ ) and polymers containing sulfonyl chloride groups ( $-\text{SO}_2\text{Cl}$ ).

60. The electrically conductive polymer blend composition defined in claim 59 wherein said polydopant is polyamic acid that is photosensitive.

61. The electrically conductive polymer blend composition defined in claim <sup>87</sup>59 wherein said electrically conductive polymer is polyaniline and said polydopant is polyamic acid.

62. The electrically conductive polymer blend composition defined in claim 59 wherein said electrically conductive polymer is polythiophene and said polydopant is a polyacrylic acid.

63. The electrically conductive polymer blend composition defined in claim 59 that is in form of a gel.

64. The electrically conductive polymer blend composition defined in claim 59 that is formed into a shaped article.

65. The electrically conductive polymer blend composition defined in claim 64 wherein the shaped article is a fiber.

66. A polymer blend composition comprising a frustrated blend of polyimide and an electrically conductive polymer in undoped form selected from the group consisting of substituted and unsubstituted polyparaphenylenevinylenes, polyanilines, polyazines, polythiophenes, poly-p-phenylene sulfides, polyfurans, polypyrroles, polyselenophenes, polyacetylenes formed from soluble precursors and combinations and blends thereof.

67. A method of preparing an electrically conductive intercalated molecular polymer blend composition comprising blending in an organic solvent a Lewis base electrically conducting polymer in undoped form and a Lewis acid polymer dopant said polymers being reacted in said solvent homogeneously, to obtain a uniform dispersion at a molecular scale as a result of an interaction along the length of said polymer.

68. The method of preparing the electrically conductive polymer blend defined in claim 67; wherein said Lewis acid polymer is selected from the group consisting of ~~polymeric~~ <sup>Polyacrylic</sup> acid, polysulfonic acid, cellulose sulfonic acid, polyamic acid, photosensitive polyamic acid, polyphosphoric acid, acid chloride containing polymers and sulfonyl chloride containing polymers.

69. The method of preparing the electrically conductive polymer blend defined in claim 68, wherein said Lewis base conducting polymer is selected from the group consisting of substituted and unsubstituted polyparaphenylenes, polyanilines, polyazines, polythiophenes, poly-p-phenylene sulfides, polyfuranes, polypyrroles, polyselenophenes, polyacetylenes formed from soluble precursors and combinations and blends thereof.

70. The method of preparing the electrically conductive polymer blend defined in claim 69, wherein said Lewis acid polymer is selected from the group consisting of ~~polymeric~~ <sup>Polyacrylic</sup> acid, polysulfonic acid, cellulose sulfonic acid, polyamic acid, photosensitive polyamic acid, polyphosphoric acid, acid chloride

containing polymers and sulfonyl chloride containing polymers.

71. The method of preparing the electrically conductive polymer blend defined in claim 70 wherein the conducting polymer is polyaniline and said Lewis acid polymer is polyamic acid.

72. The method of preparing the electrically conductive polymer blend defined in claim 70 wherein the blend is formed into a conductive gel in dilute solution which is formed into a shaped article.

73. The method of preparing the electrically conductive polymer blend defined in claim 70 wherein said blend is processed in the solid state.

74. The method defined in claim 72 wherein said shaped article is a fiber.

75. The method defined in claim 72 wherein said shaped article is a film.

76. The method defined in claim 72 wherein said shaped article is a body.

77. The electrically conductive polymer blend composition of claim 63, wherein said gel has been formed into a fiber.

78. The electrically conductive polymer blend composition defined in claim 64 wherein said shaped article is a film.

79. A polymer blend composition comprising a frustrated blend of polyimide and an electrically conductive polymer in doped form selected from the group consisting of substituted and unsubstituted polyparaphenylenevinylenes, polyanilines, polyazines, polythiophenes, poly-p-phenylene sulfides, polyfurans,